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Reusing Superfund Sites



**Turning
Toxic Wastelands
into Productive Assets**



COVER: Clockwise from top left: Golfers at the Old Works – a Jack Nicklaus-designed course built on the former Anaconda Smelter Superfund site in Montana; Children at an inner-city daycare center located at the RSR Corp. site in West Dallas, Texas; Netscape Communications' World Headquarters, which is built at the former Fairchild Semiconductor site in California

In California's Silicon Valley, Netscape Communications opens a new office campus – allowing the software giant to expand its World Headquarters, and the local community to enjoy the benefits of 1,600 software development jobs. Across the country in Virginia, two parks are added to the York County recreational system – providing thousands of residents with a new place to play softball and soccer.

Farther to the south, a critical maintenance and repair center is built for the Dade County, Florida, rail system – ensuring fast and reliable train service for over 50,000 daily commuters in the Miami metropolitan area. Up in the Mountain Northwest,

outdoor enthusiasts come from miles around to enjoy a 2,500-acre wetlands area in Montana's Warm Springs Ponds – which also provides an important habitat for migrating Canada geese and a breeding ground for dozens of songbird species.

And in West Dallas, Texas, an abandoned strip mall is renovated and the first major supermarket ever built in the area opens for business. In addition to fulfilling a critical need for the residents of this inner-city neighborhood, the new supermarket serves as a catalyst to bring even more development to this low income community, including the building of public service facilities and hundreds of new homes.

Trout fishing at the Silver Bow Creek/Warm Springs Pond site (Butte, Montana)



Children's soccer at the Chisman Creek site (York County, Virginia)



Netscape World Headquarters at the Fairchild Semiconductor site (Mountain View, California)

New supermarket at the RSR Corp. site (West Dallas, Texas)



Commuter trains maintained at the Miami Drum Services site (Dade County, Florida)

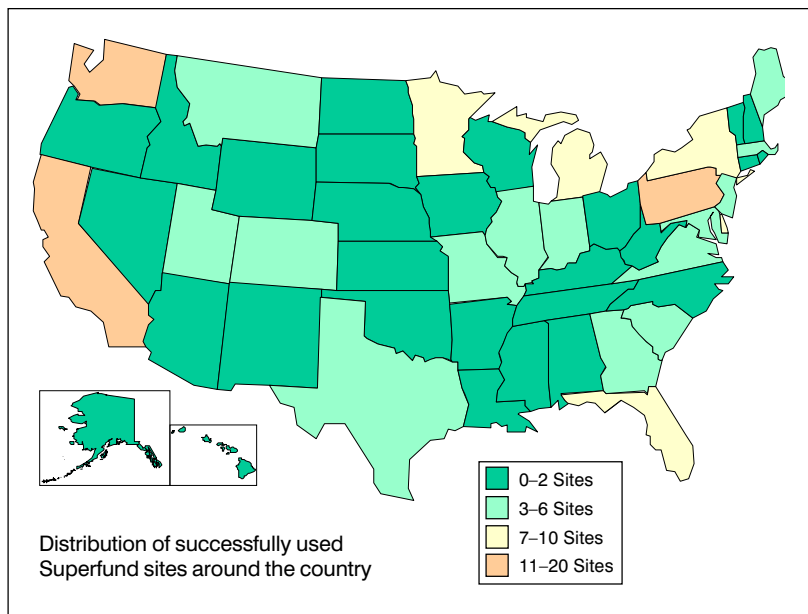


Five very different success stories from five different areas of the country. But they have one surprising thing in common. The Netscape World Headquarters, the county recreational facilities, the maintenance center for the regional rail system, the wildlife habitat, and the new inner city supermarket – all were built on cleaned up Superfund sites.

Many people still think of Superfund sites as permanent toxic wastelands in the middle of their communities. There are vivid memories of more than 500 families having to leave their homes when the entire town of Times Beach, Missouri, had to be closed because of the discovery of dioxin. And in Love Canal, New York, more than 900 families had to be relocated when hazardous wastes leached from an industrial landfill contaminating nearby homes. Superfund evokes images of workers in “moon suits” and areas fenced off with large “Danger–Keep Out” signs.

That was the 1980s. Two decades later, much has changed. In Times Beach, 265,000 tons of dioxin-contaminated soil was dug up and incinerated. Thanks to new habitat management practices, Times Beach is now an extensive bird sanctuary and migratory bird waterway. At Love Canal, cleanup activities included demolition of the contaminated houses and construction of a specially designed system that permanently entombs the toxic materials. As a result, all contamination is safely contained. Families are now moving back into the area and more than 200 new homes have been sold.

Bird sanctuaries. Revitalized neighborhoods. These are the new images of Superfund. Other images include Jack Nicklaus teeing off at a golf course that



he designed at a closed copper smelter in Montana. Or a Home Depot opening at a site that was once a radium processing plant – bringing new jobs and income to a disadvantaged community near downtown Denver.

Areas that were once dangerous are now being cleaned up and turned into office parks, playing fields, industrial centers, shopping centers, residential areas, tourist centers, and wetlands. Sites that were once abandoned or underused have now become valuable community resources. Areas that once helped to pull the local economy down are now generating new tax revenue and serving as catalysts for broader revitalization.

There have been more than 170 success stories at Superfund sites in all areas of the country – over 130 of them involving totally new uses for a site. But this is just the beginning. These successes will be repeated at hundreds of other Superfund sites in the next few years. One could be at a site in your community.

How Superfund Sites Have Been Safely and Productively Reused

The stories of successful reuse differ because communities differ. And the reuse of each Superfund site begins and ends with the needs of the particular community in which the site is located.

Golf and Smelter Slag? Nicklaus Shows How It “Works”

It wasn't Jack Nicklaus who first decided to build the Old Works Golf Course at a shut-down copper smelting facility in Anaconda, Montana. It was the people of Anaconda working together with their local government, the U.S. Environmental Protection Agency (EPA), and the owner of the site, the Atlantic Richfield Company (ARCO).

"This community is amazing and deserves an incredible amount of credit for making this happen. . . We took something that was entirely a negative, costing too much money and taking too much time, and turned it into something positive for the community."

Sandy Stash,
ARCO's Montana facilities manager



Anaconda—
Then: Shut-down copper smelter

Now: Jack Nicklaus in “sland” trap



Central City-Clear Creek, Colorado

The towns of Central City and Black Hawk were left badly contaminated after a century of heavy mining for gold and silver. Once considered the richest square mile on earth, Central City had become an economic and toxic wasteland.

Local developers, EPA, and the State of Colorado entered into a partnership that took advantage of a 1991 Colorado law. The law allowed small stakes gambling in order to preserve historic mining towns and revitalize these economically depressed communities. Once again, speculators were attracted to the area, not to mine silver and gold, but to renovate

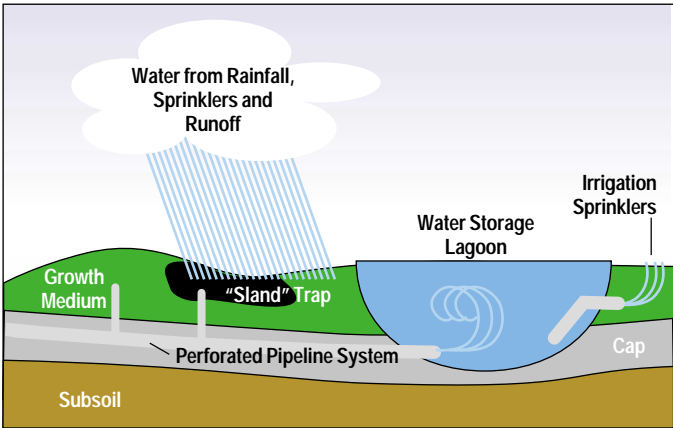
historic structures and clean up abandoned mine sites for redevelopment into casinos. Three casinos are open for business on land that had once been contaminated. Additional casino projects are currently underway.

The attraction of new businesses to the area has had a substantial impact on the formerly depressed economies of Central City and Black Hawk, providing over 3,800 permanent jobs and \$57 million in total annual income. The successful reuse of this Superfund site has enabled the towns of Central City and Black Hawk to regain some of the wealth and grandeur they enjoyed a century ago.

The Anaconda Smelter was the backbone of the local economy for a century. When it shut down in 1980, hundreds of people were out of work. The smelter also left behind an environmental legacy of more than 1.5 million cubic yards of soil, slag, and flue dust contaminated with heavy metals such as arsenic, cadmium, copper, lead, and zinc. People were worried that Anaconda would turn into an economic ghost town.

Rather than suffer this fate, the Anaconda community, ARCO, and EPA formed a partnership – not only to clean up the site – but to preserve its historic significance and allow for redevelopment. They considered a number of options, but one day, Gene Vuckovich, the Anaconda city and county manager, asked: “Why don’t you make a golf course out of it?” His proposal was first met with “a few chuckles” and some skepticism, but in time, the partnership agreed.

To ensure public safety and to protect the environment, EPA and ARCO used a variety of techniques to make these sites safe. The EPA/ARCO partnership treated and contained approximately 316,500 cubic



Protecting the golf course at Anaconda. Infiltration from irrigation and rainfall is recycled to support the vegetation on the fairways. The clay and limestone cap prevents the recycled water from coming into contact with any remaining contaminants.

Bangor Gas Works, Maine

For over 100 years, the Bangor Gas Works was the location of a coal gasification plant. Vast quantities of viscous coal tar, a by-product of coal gasification, were stored in large underground storage tanks and in subsurface pools.

A landscaped, full-service supermarket now sits on what was once a toxic eyesore – thanks to a partnership between the City of Bangor, Boulos Developers, Shaw’s Supermarket, EPA, and the Maine Department of Environmental Protection. Neighborhood residents – many of whom are lower income, disabled, or elderly – now have access to a full-service modern supermarket, pharmacy, and photo lab. The redevelopment of this site has spurred other projects nearby that benefit the community, such as the construction of two restaurants, housing units for the elderly, and plans for three department stores.

The Bangor Gas Works site received an award for *Blue Ribbon Practices in Community Development* in recognition of the significant number of jobs created. And the City of Bangor and Shaw’s Supermarket received the *Neighborhood Partnership Award* recognizing their collaborative efforts to revitalize an under-served community and improve the quality of life for area residents.

yards of flue dust at the former smelter using a cement/silica-based stabilization technique that transformed the dust into an inert solid. The 250-acre area of the golf course was covered with a thick clay and limestone cap – topped by 18-20 inches of soil to support the golf course’s vegetation.

In addition, a state-of-the-art irrigation system was installed. Water from sprinklers, rainfall, and runoff now filters down through the growing surface where the water collects in a perforated underground pipeline. The underground pipe drains into storage

ponds. A computerized irrigation system then takes the captured water in the ponds and reuses it for watering the fairways and greens. Situated beneath both the topsoil and the pipeline, the clay and limestone cap blocks any further penetration of water into underlying subsoils. This unique and complex system ensures that anyone playing golf or walking on the surrounding hiking trails is protected from contamination.

A key component of the success in reusing the site as a golf course was the participation of Jack Nicklaus. As Anaconda city and county manager Vuckovich put it: "I think we interviewed seven of the ten top golf course designers in the country and we chose Jack Nicklaus. We didn't want just any old course, we wanted a world class course."

As designer, Nicklaus took advantage of the area's spectacular mountain vistas and preserved many of

the unique historic characteristics of the former smelting site. He used one of those characteristics to create the most distinctive aspect of the course. Nicklaus decided not to fill the bunkers with ordinary white sand, but instead with black "sland" – an inert and harmless sand-like slag left behind by the smelter's furnaces. Besides providing players with the unique challenge of hitting their wayward balls out of "sland" traps, these black bunkers add to the striking visual appeal of the golf course.

"We had an opportunity out here to either do something with the land, or not do something with the land. Just give me the worst site, and we'll make something out of it, because you can take land and do something with it if you have a little bit of imagination."

Jack Nicklaus,
designer of the Old Works Golf Course

Woolfolk Chemical Plant, Georgia

Woolfolk Chemical Plant began operations in 1920. During World War II, the U.S. Chemical Warfare Service used the plant to manufacture arsenic trichloride, a key ingredient of poison gas. Later, the plant produced lawn, garden, and agricultural pesticides.



Once-contaminated antebellum farmhouse now reused as Troutman Welcome Center

In the 1980s, the State of Georgia discovered that chemicals had seeped from the plant into the surrounding soil and groundwater. EPA determined that the contamination posed a threat to the town's 8,000 residents and would require immediate cleanup.

EPA worked closely with Canadyne-Georgia, the plant operator, to remove 3,700 cubic yards of arsenic-laden soil, along with contaminated buildings and debris. Following the cleanup, EPA, Canadyne-Georgia, and the local community met to discuss the best use of these properties. At the community's request, a contaminated antebellum farmhouse was cleaned up and remodeled into a tourist welcome center and office space for the Fort Valley Chamber of Commerce. Also, several contaminated homes were torn down to make way for a new community library. In addition to attracting new business to the community, the reuse of this toxic waste site has rekindled civic pride.

In the end, the partnership between the people of Anaconda, ARCO, EPA, and Nicklaus created a course that Golf Journal praised as “world class . . . with 18 fascinating holes.”

**Internet Communicators
Replace Ground
Contaminators**

One thousand miles to the southwest in Mountain View, California, there was a different community with a different need. So that community came up with a different reuse for a former Superfund site.

Mountain View is not a depressed community in need of economic revitalization. Located in the heart of Silicon Valley, Mountain View is at ground zero of America’s high-tech economic boom. Real estate in

“History may not repeat itself, but addresses in the Valley do. In the ’60s and ’70s this was the site of Fairchild Electronics, which put the “Silicon” into Silicon Valley. Fairchild was bought out, and in ’95 the site became home to then start-up Netscape. Netscape’s headquarters remain here – a Superfund cleanup site, by the way.”

Washington Post

Mountain View is some of the most valuable in the country.

All the more reason not to allow 56 acres of that precious real estate to lie idle. The Fairchild Semiconductor Superfund site was once the home of more than a dozen computer firms that used solvents daily in their manufacturing process. Hun-

dreds of gallons of these solvents were spilled into the soil and groundwater over a 20-year period. In 1981, the State of California discovered contamination in the underlying aquifer that provided drinking water for 270,000 residents.

To clean up and redevelop the Fairchild site, a partnership was formed between the Mountain View community, EPA, the State of California, the

Are These Sites Safe?

The Environmental Protection Agency’s first priority at any Superfund site is protecting human health and the environment. In fact, EPA is required by law to clean up a site so that it protects human health and the environment before that site can be reused.

EPA goes to great lengths to ensure that each site is safe before it can be returned to use. There is no “one-size-fits-all” approach to cleanup. Rather, an individual, step-by-step strategy is taken at each site to make certain that a site is protective of human health and the environment. At each stage, EPA consults with the neighboring community.

Here are the steps that EPA takes to make sure a site is safe:

1. EPA thoroughly investigates contamination problems at the site. The investigation is designed to tell EPA whether human health or the environment is threatened by contamination, and if so, what the nature and extent of the contamination is.

2. EPA meets with the site owner, the community, and other interested parties to find out what they anticipate the future use of the site to be.

3. EPA selects an individual cleanup strategy based on the investigation and considers the anticipated future uses of the site. Before proceeding, EPA asks the community to comment on this strategy.

4. Site cleanup begins and is not considered complete until the area is safe for the intended use.

5. After cleanup, EPA monitors a site until it is certain that no future problems will arise.

There are as many ways to clean up a Superfund site as there are types of sites. EPA tailors the techniques and technologies to the individual problems posed by different areas of a site. Here are some of the cleanup techniques that EPA uses to make sure that all areas of a site are safe:

- **Removal:** Removing contaminants from the site to a facility that can safely handle the waste.
- **Treatment:** Treating the waste at the site to remove the contaminants from the soil, sediment, or groundwater.
- **Recycling:** Treating or converting toxic waste material to make it safe and reusing it for other purposes.
- **Containment:** Placing covers over toxic waste deposits or barriers around them to prevent migration and to keep people from coming into contact with the waste.
- **Thermal Treatment:** Using elevated temperatures to render contaminants harmless by increasing their volatility; immobilizing them; or destroying them through burning, decomposition, or detonation.
- **Solidification:** Physically binding or enclosing toxic contaminants within a stabilized mass like cement.
- **Stabilization:** Inducing chemical reactions between a stabilizing agent (such as lime, Portland cement, fly ash, or kiln dust) and the contaminants to reduce their mobility.
- **Bioremediation:** Breaking down toxic contaminants by using natural microorganisms.
- **Chemical Transformation:** Detoxifying contaminants by transforming their chemical structure.
- **Natural Attenuation:** Using natural biotransformation processes such as dilution, dispersion, volatilization, biodegradation, adsorption, and chemical reactions to reduce contaminant concentrations to acceptable levels.

At the Anaconda Smelter site, EPA and ARCO applied several of these cleanup techniques to make certain that the area was safe before it was reused. In different areas of the site, wastes were removed, recycled, treated, or solidified. To protect people and keep animals from coming into contact with wastes remaining on-site, the golf course was designed atop a thick containment cap. For future protection of the groundwater, the entire course was lined with clay and limestone, and a complex drainage system was put in place.

The Anaconda site illustrates some of the many techniques that EPA uses to make certain that former Superfund sites are safe before they are reused – and that they remain safe in the future.



Anaconda after cleanup and reuse – Golfers on the ninth tee can now take aim at the smokestack of the former copper smelter

City of Mountain View, and Keenan-Lovewell Ventures, a local real estate developer. To ensure public safety, it was necessary to excavate and treat more than 1,700 cubic yards of contaminated soil. The cleanup also involved removing several underground storage tanks, and constructing groundwater treatment plants on the property.

As the cleanup proceeded, Keenan-Lovewell began plans to build office developments at the former Fairchild site. The first occupant was high-tech giant, Netscape Communications. Netscape used this property to add a new facility to its World Headquarters – an office complex that resembles a park or a college campus more than the workplace of 1,600 top executives, programmers, marketers, and testers. Complete with cascading fountains



Fairchild Semiconductor—
Then: Excavating contaminated soil

Now: New campus of Netscape's World Headquarters



Denver Radium, Colorado

The Denver Radium site was contaminated with radioactive soil and debris by a radium processing plant that began operations in the early 1900s. Later property owners mishandled these by-products that contained radium-226, arsenic, zinc, and lead by using them as fill or foundation materials. The site was eventually abandoned in the 1980s.

In 1983, EPA began cleanup, excavating tons of radioactive waste. Contaminated buildings and materials were removed and metals-contaminated soil was covered with a protective cap.

In 1996, Home Depot opened a store on the once-contaminated property. The reuse of the Denver Radium site has resulted in many benefits for this largely low income and minority area, including more than 110 permanent jobs, \$1.9 million in total annual income, and substantial increases in public revenue and surrounding property values.

and acres of lush greenery, this once-contaminated industrial site now adds beauty to the Mountain View community while also adding substantial income to the local economy.

These are the stories of Anaconda and Mountain View. And their stories are being repeated at communities all over the country. Properties that once lay idle – drains on the local economies – are now being put back into productive use. Areas that were once dangerous and off-limits are now places where people can safely work and play. These are only some of the benefits for a community that decides to redevelop and reuse a Superfund site.

How Communities Have Benefited From Reusing Superfund Sites

More High-Tech Development in Mountain View

The benefits to Mountain View in redeveloping the Fairchild site were immediate. The office campus at the former Superfund site is an expansion of Netscape's World Headquarters. The high-tech executives and employees who work at the Netscape campus collectively earn more than \$153 million annually – infusing over \$122 million of personal spending into the economy and providing more than \$11 million in local and state taxes.

However, the benefits to Mountain View in redeveloping the Fairchild site do not stop with Netscape. Other firms are either leasing space or building their own office developments on the former Superfund site. The firms read like a Who's Who of the "old" and "new" economies: America Online, Veritas Software, Hewlett-Packard, Open TV, Nokia, Micro Focus, Synopsys, and KPMG Peat Marwick. By 1999, all the available office space had been leased and most of the remaining property was at some stage of development.

A New Sense of Pride in Anaconda

In Anaconda, the benefits of reuse are harder to measure, but just as important. Anaconda was historically a one-factory town and that factory closed down. Unemployment was high and many in the community worried that their town would not survive.

The Old Works Golf Course not only provides a new place for the residents of Anaconda to exercise and have fun – but

has also created a new sense of pride in the community. What's more, the golf course is becoming a tourist magnet. People come from miles around because they have heard about the unique and beautiful Jack Nicklaus-designed course. They come to play golf – and find out that the area also offers excellent skiing, fishing, hiking, and hunting. So they come back.

As the recreational opportunities have increased, new jobs have been generated. The new opportunities have also led to a rise in property values around the Old Works Golf Course and an increase in business investments. What's more, this attention to the recreational opportunities of the area has created a renewed respect for its ecology. The once-barren

"I'm amazed at what they've done. There was nothing living out there before. It was desolate. There was nothing out there."

Gene Colucci,
lifelong Anaconda resident



More than just golf – Hikers on a trail that highlights Anaconda's smelting heritage

landscape is slowly being restored to its former beauty. Trout once again fill Warm Springs Creek, and the plant and animal life are flourishing.

New jobs. New recreational opportunities. Higher property values. More income to the community. A new sense of pride. These are just some of the benefits of reusing Superfund sites.

New Uses for Sites Around the Country

There are six categories for how a site can be used: commercial, recreational, ecological, public service, residential, and agricultural. However, these categories are not mutually exclusive. One use usually leads to another, which then leads to still another.

Overall Benefits of Commercial Reuse

- 14,560 jobs
- \$450 million in annual income
- \$360 million in personal spending
- \$31 million in public tax revenue

restaurants, industrial parks, shopping centers, and manufacturing plants. In fact, 117 sites are in some form of commercial use.

Recreational Use. The Jack Nicklaus-designed golf course at the former Anaconda smelter may have received the most attention, but there are 47 other

Reuse Categories

- Commercial
- Recreational
- Ecological
- Public Service
- Residential
- Agricultural

Commercial Use.

Netscape's transformation of the Fairchild site into a high-tech office campus is a good illustration of commercial use, but it is only one of many examples. Former Superfund sites (many in economically-troubled areas) are now the location of retail stores, small businesses, franchises, family-run

Silver Bow Creek/Warm Springs Pond, Montana

[Ecological/Recreational Uses]

Years of copper mining had created a desolate wasteland on this 2,500-acre site. For 65 years miners dumped wastes into four nearby streams that carried contamination from 19 million tons of tailings and other mining wastes into the headwaters of the Clark Fork River. In an attempt to slow the harmful effect of the tailings on the river, the Anaconda Copper Company dug three collection ponds, which in turn became severely polluted.

EPA worked with the Atlantic Richfield Company (ARCO) to clean up the area. EPA and ARCO removed more than 450,000 cubic yards of sediment from the ponds and installed a comprehensive water treatment system.

Today, the wetlands at Warm Springs Pond are an important habitat for migrating Canada geese and breeding area for dozens of songbirds. The wetlands also harbor more than 230 types of resident or migratory wildlife. What's more, this restored site provides the community with bike paths, numerous fishing sites, and even an area where dogs can be trained.



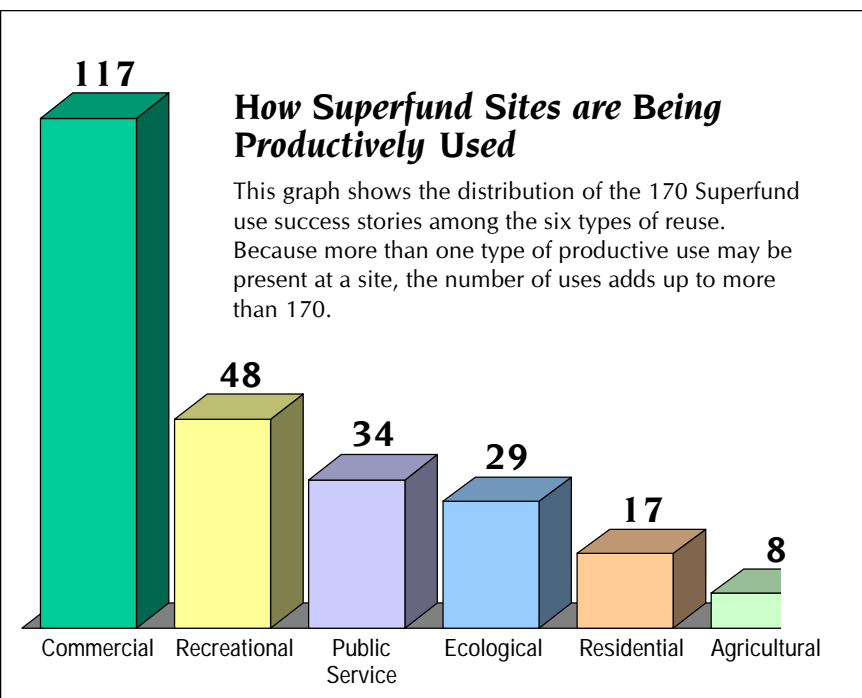
Ponds once choked with mining wastes are now a fish and wildlife habitat

sites where communities have developed properties for recreational use. Besides golf courses, communities have created playgrounds, parks, boat launches, campgrounds, ski slopes, and playing fields for soccer, baseball, and softball.

13,000 acres have been returned to recreational and ecological use

Ecological Use. The once-notorious Times Beach is now a bird sanctuary – thanks to a decision by the State of Missouri and several local interest groups to increase the amount of green space along the Meremac River and develop the site as a park. At 28 other sites, there has been a similar focus on ecological use. New wetlands, wildlife sanctuaries, and wilderness areas have been created in places that were once contaminated and barren. Rivers, lakes, bayous, bays, and streams have been restored to their natural condition.

Public Service Use. In Florida, the Miami Drum Services site has been redeveloped as the William Lehman Operations and Maintenance Center – providing a crucial repair facility used by the Dade County rail system to effectively serve over 50,000 commuters a day. In nearby Georgia, a portion of the Woolfolk Chemical Plant has been restored as a public library. Similar public services are provided at an additional 33 of the 170 sites. Other types of public service uses include visitors' centers, schools, and many different types of public works facilities.



Residential Use. Following the successful cleanup at Love Canal, more than 200 new homes have been built on this formerly desolate landscape. At 16 other sites, communities are developing once-contaminated properties as single-family homes or using them for apartments, condominiums, or assisted-care housing.

Agricultural Use. At eight sites, the land is being used for activities such as growing crops and providing pasture for livestock. For example, when the Silver Mountain Mine in Washington closed, it left behind 7,000 tons of cyanide-laced mine tailings and a basin filled with 20,000 gallons of cyanide-contaminated water. A partnership between EPA, the State of Washington, the local community, and a local rancher resulted in the cleanup and containment of the cyanide contamination which made it possible to once again use portions of the site as grazing land for cattle.

RSR Corp. (Murph Metals) Superfund Site

[Residential/Commercial Uses]

For over 50 years, the RSR Corporation operated a lead smelter and disposed of battery material on a site in West Dallas, Texas. The smelter sent lead-contaminated dust into the surrounding community, casting a toxic shadow over homes and businesses within a one-mile radius. Approximately 17,000 people lived in the vicinity of the smelter – a primarily low income and minority population. Within a half mile of the smelter, 10 percent of children under the age of six had lead in their blood at levels that were considered unacceptable when the testing was done in 1983. If today's standards were used, almost 90 percent of the children would have been considered to have unacceptable blood lead levels.



Strong community involvement has played a major role in the ongoing cleanup and reuse of this site – including the appointment of a bilingual team to encourage citizen participation in all decisions.



The Dallas Housing Authority is making a major push to provide affordable housing for the low-income community surrounding the former RSR Corp. Superfund site. Hundreds of new homes have already been built – with hundreds more expected in the future.



Clockwise from top right: Children's play room at the Dallas Housing Authority Headquarters built on the former RSR site; Location of future homes; A new public housing duplex; Interior of a new home



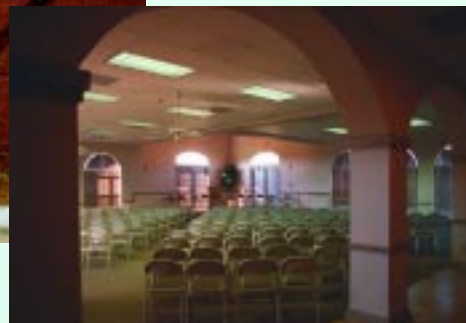
Cleanup activities involved the demolition, decontamination, and removal of various structures and buildings, including 167 multi-family public housing buildings. Today, blood lead levels in West Dallas are below national averages.



The Carnival store is only one of many new developments in this low income area. The Lakewest Multi-Purpose Center (started in 1998) houses a YMCA, a Headstart facility, the Parkway Medical Clinic, and a local branch of the Dallas police. People affiliated with the Texas Rangers baseball team donated a new ballfield, which was built in 1999. And the Dallas Housing Authority is proceeding with a major low-income housing project that includes both the renovation of existing units and construction of over 1,000 new homes. Hundreds of these homes have already been built.



The initiation of cleanup activities at the RSR site has been a catalyst for bringing new development into this impoverished neighborhood. In 1995, the community, EPA, and the Dallas Housing Authority formed a partnership to foster the site's reuse. That same year, a Carnival Food Store opened in a formerly-abandoned section of a strip mall – the first major supermarket development in the West Dallas area.



Future developments include Goodwill Industries, which is currently in the planning and design stage of a multi-million dollar facility. Much work still needs to be done, but the future looks bright for this once-contaminated inner-city neighborhood.



Clockwise from top left: Carnival Food Store; Lakewest Multi-Purpose Center, which includes a children's computer room and community meeting room; Youth ball field

One New Use Leads to Another

In Anaconda, the golf course may be categorized as recreational use, but simply calling it “recreational” tells only part of the story. Golfers who come to the Old Works pay a variety of charges, such as “greens” fees, rentals, and concessions. Also, since many of those golfers come from out of town, they stay at local motels and eat at local restaurants. All this generates income for the community.

So this recreational use also provides new commercial opportunities. And, in the case of Anaconda, these new recreational and commercial opportunities caused the community to have a new respect for the area’s natural surroundings.

In Mountain View, the commercial redevelopment of the former Fairchild site is just one part of a larger plan by the city to link a nearby residential community with the high-tech job center that now occupies the former Superfund site. Plans are underway to build light rail stations, parks, biking trails, and open spaces so that there will be connections (most of them walkable) between where the residents of Mountain View live, work, and play.

Each community decides how far and how wide the benefits of reusing a Superfund site will extend. The particular uses will depend on the needs and desires of your community.

Chisman Creek, Virginia

[Recreational/Ecological Uses]

For 17 years, a local contractor used the abandoned sand and gravel pits on the Chisman Creek property to dump more than 500,000 tons of fly ash from Virginia Power’s Yorktown Station. In 1980, complaints of discolored well water prompted state agencies to investigate. Results of the sampling showed heavy metal contamination in Chisman Creek, in the groundwater under the disposal areas, and in various on-site ponds.

A 12-member Stewardship Committee, composed of both professionals and local residents, was organized to oversee the cleanup and redevelopment of the site. The committee decided that creating a sports park would be the perfect reuse solution. The transformation of the site resulted in a number of benefits to the community. Chisman Creek Park has two lighted softball fields, restrooms, and a parking lot. It supports a 42-team softball league in the summer and is the home of the youth soccer program in the fall. The adjacent Wolf Trap Park features four soccer fields, restrooms, a parking lot, two ponds, and the County’s Memorial Tree Grove.

The successful partnership of EPA, York County, and Virginia Power, working together to coordinate the cleanup and redevelopment of the Chisman Creek site, earned an *Environmental Achievement Award* from the National Environmental Awards Council. And the Consulting Engineers Council of Pennsylvania recognized the engineering firm that designed the drainage system, clay cap, and recreational facilities with the *Grand Conceptor* award.



Soccer, softball, and children in place of fly ash and contamination

How EPA Can Help Communities

On July 23, 1999, EPA announced a national effort (called the Superfund Redevelopment Initiative) to help communities return Superfund sites to productive use. With this Initiative, EPA has put in place a coordinated national program to make certain that communities have the tools and information needed for the reuse of Superfund sites. As always, EPA's first priority is to make sure that all cleanups protect human health and the environment. Without compromising cleanup standards, EPA can help communities and other interested parties to realize the enormous potential of reusing Superfund sites.



Partnership turns former Anaconda smelter into a recreational resort

While the rewards of reuse are great, the challenges of starting on the road to reuse can sometimes seem daunting. Interested communities will quickly find that the road contains a confusing tangle of technical and legal issues, which few communities have the expertise or resources to unravel. What's more, enormous amounts of money may be needed at the beginning – with returns on the investment not expected for a number of years.

EPA is available to assist communities on the road to reuse. Some of the ways EPA can help include providing assistance in developing partnerships, finding the seed money, understanding technical issues, and overcoming legal barriers.

Developing Partnerships

Partnerships have been key to the reuse of Superfund sites. In Mountain View, a partnership between the community, the State of California, EPA, and a local real estate developer turned acres of contaminated land into a beautiful high-tech campus. In Anaconda, a partnership between the community, EPA, ARCO,

and Jack Nicklaus turned a town that many thought was economically and environmentally dead into a revitalized vacation spot with a world class golf

"From the beginning, everybody wanted to make this a win-win-win situation. It made for a very enjoyable project. I give a lot of credit to the community and to ARCO."

Charlie Coleman,
EPA Project Manager for the Anaconda site

course and year-round opportunities for camping, hiking, fishing, and skiing.

Chisman Creek, Virginia

EPA coordinated with state and federal agencies to complete sampling, and health and ecological assessments at the site. EPA, York County, and Virginia Power formed a partnership to coordinate the cleanup and redevelopment of the Chisman Creek site. This partnership not only created two successful recreational facilities, but earned an *Environmental Achievement Award* from the National Environmental Awards Council.

These reuse stories clearly demonstrate that partnerships with local businesses, large corporations, state governments, and local officials are essential to the success of Superfund reuse projects. For example, owners of the sites may have the financial resources – and legal obligation – to both clean up a site and set it on the road to reuse. Local developers may have the knowledge – and financial interest – to make certain that a site is reused in a way that is most economically viable. And local officials have a vested interest to make certain that the new use fits the needs and desires of their community.

Partnerships have been key to reuse – and a crucial partner for successful reuse has been EPA. One way EPA helps communities develop partnerships for reuse is by supporting the formation of Community Advisory Groups (CAGs). CAGs are committees made up of citizens with diverse community interests that provide a public forum for discussing community concerns about Superfund sites – including how the community wants to reuse a site.

Once EPA understands a community's concerns, it can help that community find the right partners for a particular site. For example, the U.S. Soccer Foundation is interested in building soccer fields around the country to help promote the sport. Because many Superfund sites can safely support soccer fields (and plans for local developers to build the fields can be easily integrated into cleanups), EPA has entered into a partnership with the Foundation. If a community is interested in reusing all or a portion of a site for soccer fields, EPA can provide a referral to the U.S. Soccer Foundation.

Finding the Seed Money

When EPA began cleanup operations at the Avtex Fibers site in Front Royal, Virginia, a partnership was formed by the community, private development firms, government agencies, and one of the owners

of the site, the FMC Corporation. This partnership conducted a number of workshops to determine how the community of Front Royal wanted to use the site. The community determined that portions of the site should be used for various commercial, recreational, and ecological purposes. One of the recreational purposes emphasized by the community, and later put in the Master Plan for Avtex Fibers, was to reuse a portion of the site for soccer fields. So when EPA Administrator Carol Browner announced the Superfund Redevelopment Initiative at the Avtex Fibers site in 1999, the audience included both officials from the U.S. Soccer Foundation and children from Front Royal who loved to play soccer.

Denver Radium, Colorado

EPA and Home Depot, Inc. agreed that the company would participate in the cleanup of contaminated soil in exchange for limits on liability. With the two parties working together early in the process, cleanup activities were tailored to accommodate construction of a new Home Depot store on the site. EPA and Home Depot built electric and other utility corridors into the protective cap, which ensures the integrity of the cap, protects utility workers, and saves Home Depot money in future maintenance of its facility.



New jobs as well as new shopping opportunities are the result of reuse at former radium processing site.

The First Round of Superfund Redevelopment Pilots

In 1999, EPA gave a jump-start to ten communities from all regions of the country to help them assess future uses of a Superfund site. The jump-start came in the form of financing or services from EPA or the parties who have accepted responsibility for contamination at the site. Support was provided to a wide range of communities for a variety of reuse projects. Here are the first ten Superfund sites chosen as pilots:

Roebbing Steel, Roebbing, NJ • Roebbing Steel operated from 1906 to the early 1980s. The community is considering using the site as a park, a recreational area, or for commercial redevelopment.

Midvale Slag, Midvale, UT • Midvale Slag is a 530-acre area where smelting and refining operations occurred between the 1870s and 1958. The City of Midvale has used the grant to prepare a reuse plan that proposes a variety of options, including ecological, residential, commercial, and industrial uses.

Pownal Tannery, Pownal, VT • After a century of operations, this former woolen mill and tannery closed in 1988. The redevelopment grant for the town of Pownal will be used to study a variety of uses, including new public use projects.

Escambia Wood – Pensacola, Pensacola, FL • The neighborhoods around this former wood preserving facility are ethnically diverse and have a poverty rate above the national average. Initial plans are to redevelop the site for commercial or light industrial uses.

Tar Lake, Mancelona, MI • From 1882 to 1945, this facility operated as an iron works. The surrounding county has a high unemployment rate and low property values. The site is being considered for light industrial, commercial, and recreational land uses.

National Mine Tailings, Park Hills, MO • This area was heavily mined for lead in the 19th and early 20th centuries. The county has the lowest per capita income of the ten pilot sites and a high rate of unemployment. The pilot grant money will focus on community coordination and commercial reuse.

McCormick and Baxter Creosoting Company, Portland, OR • This former wood treating facility operated between 1944 and 1991. Although the site is in an industrial railroad area, the City of Portland recently purchased land to the north for ecological and recreational uses. Pilot grant funds will be used to investigate reuse options such as industrial facilities, greenways, and open space.

Frontier Fertilizer, Davis, CA • Frontier Fertilizer operated as a fertilizer and pesticide facility from 1972 through 1987. The site is situated in a rural area, convenient to the Sacramento Airport. The pilot grant will help the local governments investigate redevelopment opportunities consistent with the site's current light industrial zoning.

Many Diversified Interests (MDI), Houston, TX • MDI remelted and molded steel to manufacture specialty steel products. Although the Houston area is economically prosperous, the MDI neighborhood average income is below the poverty level. The pilot grant money will be used to work with the community as it decides the best future uses for this site.

Avtex Fibers, Front Royal, VA • The Avtex facility made synthetic fibers between 1940 and 1989 before it was closed by the Commonwealth of Virginia. The town of Front Royal has developed a master plan for the site that includes commercial and recreational uses. There is also an area near the Shenandoah River set aside as a conservancy park with hiking, biking, and nature trails.

These are the first ten pilots under EPA's Superfund Redevelopment Initiative. EPA will offer similar assistance to 40 additional communities in 2000.

The Avtex Fibers site provides an excellent example of another way EPA can help a community on the road to reuse. Avtex Fibers is one of a number of pilot sites where EPA has provided up to \$100,000 in financial aid for reuse assessment and public outreach to help determine a site's future use. At other sites, the reuse planning and outreach may be financed by companies which have accepted responsibility for the contamination at the site. EPA will consider the results of the assessment and outreach efforts when selecting a cleanup remedy.

Activities that EPA will fund under the pilot program to help determine the future use of a site

- Reuse assessments and reuse plans
- Facilitation services
- Coordination among government, community members, and organizations
- Public outreach
- Training and workshops
- Citizen advisory groups
- Technical assistance

In 1999, EPA selected ten sites from around the country as pilots. The pilot sites serve as workshops where EPA, in partnership with the community and other interested parties, can improve the techniques for making cleanups consistent with the intended uses of the site. EPA chose an additional 40 pilots in 2000.

Understanding the Technical Issues

Many Superfund sites present communities with issues that require expertise in chemistry, engineering, geology, toxicology, and law. Add in the issue of site reuse, and the community will also need expertise in architecture, financing, construction, and public planning.

EPA makes it possible for communities to hire the experts they need. In Mountain View, EPA helped

out with two technical assistance grants (TAGs). TAGs provide up to \$50,000 so that a community can hire technical experts to help its citizens understand and contribute their ideas on a wide variety of issues, including reuse.

EPA also sponsors the Technical Outreach Services for Communities (TOSC) program to help communities cope with hazardous substance issues. TOSC is a no-cost, non-advocacy program run by EPA's five university-based Hazardous Substance Research Centers.

Overcoming Legal Barriers

There are many ways that EPA can help a community with the often-complicated legal issues that surround Superfund site reuse. Many real estate firms are afraid to develop a Superfund site because of the possibility that the firm could be found liable for the enormous costs of cleanup – even for conditions that existed before anyone at the firm became involved with the site.

Bangor Gas Works, Maine

Partnership was key to successfully replacing an abandoned coal gasification plant with a full-service supermarket, pharmacy, and photo lab. EPA provided initial funds for a preliminary assessment and inspection of the site, and the City of Bangor took the lead on cleanup. To assist with redevelopment, the city granted \$975,000 in tax-increment financing and paid for a variety of public improvements, such as street and sewer upgrades. An additional \$200,000 came from the Bangor Community Development Block Grant Program. Boulos Developers and Shaw's Supermarket invested more than \$7 million to build the supermarket complex, which has spurred further development in the area.

The Second Round of Superfund Redevelopment Pilots

In 2000, EPA selected 40 new pilots, where communities will receive financing and other services to help them assess future productive uses for a Superfund site. At each pilot, the parties who have accepted responsibility for contamination are given an opportunity to provide financing or services.

EPA assistance may include personnel, facilitation, or funding of up to \$100,000 through a cooperative agreement. EPA provides financing for activities such as reuse assessments and reuse plans, public outreach, and technical assistance.

Alameda Naval Air Station (Alameda, CA)
Arkwright Dump (Spartanburg, SC)
Blackburn and Union Privileges (Walpole, MA)
California Gulch (Leadville, CO)
Central Chemical (Hagerstown, MD)
Central Wood Preserving Co. (Slaughter, LA)
Coeur d'Alene River Basin
(Panhandle Health District, ID)
Coleman-Evans Wood Preserving Co.
(Jacksonville, FL)
Continental Steel Corp. (Kokomo, IN)
Denver Radium - Operable Unit 8 (Denver, CO)
Eastland Woolen Mill (Corinna, ME)
GE - Housatonic River (Pittsfield, MA)
Hiteman Leather (West Winfield, NY)
Hudson Refinery (Cushing, OK)
Industrial Excess Landfill (Uniontown, OH)
Lake Calumet Cluster Sites (Chicago, IL)
Li Tungsten (Glen Cove, NY)
Marina Cliffs Barrel Dump (South Milwaukee, WI)
Martin Aaron Inc. (Camden, NJ)

Metal Banks (Philadelphia, PA)
Mountain Pine Pressure Treating (Plainview, AR)
Multiple Sites - 5 Superfund sites in Utah (UT)
New Bedford Harbor (New Bedford, MA)
New Hampshire Plating Co. (Merrimack, NH)
Niagara Mohawk Power Co. (Saratoga Springs, NY)
Oronogo-Duenweg Mining Belt (Jasper County, MO)
Peter Cooper (Gowanda, NY)
Raymark Industries (Stratford, CT)
Rockwell International Corp. (Allegan, MI)
RSR Corp. (Dallas, TX)
Ruston Foundry (Alexandria, LA)
Silresim Chemical Corp. (Lowell, MA)
Silver Bow Creek/Butte Area (Butte, MT)
Tennessee Products (Chattanooga, TN)
Tex-Tin Corp. (Texas City, TX)
Torch Lake (Calumet, MI)
Waste Disposal Inc. (Santa Fe Springs, CA)
Wells G&H (Woburn, MA)
White Chemical Corp. (Newark, NJ)
Yeoman Creek Landfill (Waukegan, IL)



Clean up proceeding at the Continental Steel Corporation site in Kokomo, Indiana. This 183-acre site includes an abandoned steel manufacturing facility, pickling liquor treatment lagoons, and waste disposal areas. Possible future uses of the site are for stormwater and sewer management, and as wetlands for wildlife habitat.

At the Fairchild site, EPA entered into a Prospective Purchaser Agreement (PPA) with a local real estate developer, Keenan-Lovewell Ventures. A PPA is an agreement where EPA conditionally releases a buyer from Superfund liability for contamination that existed before the buyer began work on the site. In return, the buyer agrees to help EPA with its mission of protecting human health and the

Tools for Managing Liability

- **Comfort Letters**
EPA clarifies the level of interest the government has in pursuing cleanup enforcement at a site or portion of a site
- **Prospective Purchaser Agreements**
EPA provides property purchasers with a promise that the government will not sue them for existing contamination
- **Discretionary Policies**
EPA clarifies how the Agency intends to respond to particular parties or specific circumstances

environment. The PPA requires the buyer to: avoid any activities that would disturb the cleanup; provide EPA with access to the site so that EPA can monitor the success of the cleanup; and, in many cases, help with the cleanup itself. At Fairchild, the PPA provided Keenan-Lovewell with the assurance that it could develop the property without fear of being found liable for conditions that existed before the firm began work.

In Anaconda, both the local community and ARCO played active roles in helping EPA plan the cleanup and redevelopment of the vacant smelter site as the Old Works Golf Course. For its part, EPA helped orchestrate an agreement that transferred ownership of the golf course from ARCO to Deer Lodge County and included a number of conditions that have helped put Anaconda on the road to recovery. One of those conditions requires ARCO to maintain the systems that have been put in place

"This project – probably more than anything else – speaks to the resilience of this community. This community went through one of the toughest shutdowns when the smelter was shut down. It was literally an industry that had been here for generations. I think what this project says is that this community was not going to let that get them down or being named a Superfund site was going to get them down This project would not have become a reality if the people of Anaconda had not been – the people of Anaconda."

Sandy Stash,
ARCO's Montana facilities manager

to stop any remaining contamination from migrating to the golf course area. Another condition mandates that Deer Lodge County use all non-operating revenues from the golf course to support the continued economic growth of the Anaconda area.

Central City-Clear Creek, Colorado

EPA, the State of Colorado, and local developers established a partnership that facilitated the cleanup of properties contaminated by years of heavy mining and allowed the construction of casinos and their support facilities. EPA also worked with city officials to establish a cleanup permit plan for companies interested in developing non-Superfund contaminated properties. As part of this partnership, EPA helped the local government establish action plans that determine whether and how a developer should clean up a given property.

EPA entered into a Prospective Purchaser Agreement with a property owner who has agreed to clean up a tailings pile in a residential area of Black Hawk, outside the gaming district. The agreement releases the property owner from liability for pre-existing contamination in return for specific commitments. Several future agreements are anticipated, resulting in the private cleanup of areas that would otherwise be addressed at government expense.

Where Communities Can Find Out More About Reuse

As Charlie Coleman, the EPA Project Manager for the Anaconda site, put it: Superfund reuse is "win-win-win." All the parties came out ahead in the Anaconda agreement – and this same all-around success is possible whenever a Superfund site is reused. Reuse helps to protect human health and the environment. It makes land productive (and sometimes beautiful) again. And reuse gives communities a new resource to enhance the ways they live, work, and play.

There have been more than 170 Superfund site use success stories. Hundreds more are expected in the next few years. To help your community become one of these success stories, here is where you can find out more information about the subjects discussed in this brochure:

General Sources of Information on Superfund Reuse

The Superfund Redevelopment Initiative website is at:

<http://www.epa.gov/superfund/programs/recycle/index.htm>

For questions about reuse, either call the Superfund Hotline at

1-800-424-9346 or send an e-mail to **reuse.info@epa.gov**.

Sources of Specific Information on Topics Discussed in This Brochure

How Superfund Sites Have Been Safely and Productively Reused:

<http://www.epa.gov/superfund/programs/recycle/success.htm>

Are These Sites Safe:

http://www.frtr.gov/matrix2/top_page.html

How Communities Have Benefited From Reusing Superfund Sites:

<http://www.epa.gov/superfund/programs/recycle/benefits.htm>

How EPA Can Help Communities:

<http://www.epa.gov/superfund/programs/recycle/tools.htm>

Reusing Superfund Sites

"We had an opportunity out here to either do something with the land, or not do something with the land. Just give me the worst site, and we'll make something out of it, because you can take land and do something with it if you have a little bit of imagination."

Jack Nicklaus

(at the opening of the Old Works Golf Course, which Nicklaus designed over a cleaned up Superfund site)